PB2002-102276

RESEARCH REPORT 1843-4

PLANNING FOR THE IMPACTS OF HIGHWAY RELIEF ROUTES ON SMALL- AND MEDIUM-SIZE COMMUNITIES

S. L. Handy, J. Jarrett, and S. Vanka

CENTER FOR TRANSPORTATION RESEARCH
BUREAU OF ENGINEERING RESEARCH
THE UNIVERSITY OF TEXAS AT AUSTIN

MARCH 2001

Technical Report Documentation Page

1. Report No. 0-1843-4	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Planning for the Impacts of Highway Relief Routes on Small- and Medium-Size Communities.		5. Report Date March 2001
7. Author(s) J. Jarrett, S. L. Handy, and S. Vanka		6. Performing Organization Code 8. Performing Organization Report No. 0-1843-4
9. Performing Organization Name and Address Center for Transportation Research The University of Texas at Austin 3208 Red River, Suite 200 Austin, TX 78705-2650		10. Work Unit No. (TRAIS) 11. Contract or Grant No. 0-1843
12. Sponsoring Agency Name and Address Texas Department of Transportation Research and Technology Implementation Office P.O. Box 5080 Austin, TX 78763-5080		13. Type of Report and Period Covered Research Report 9/00-3/01 14. Sponsoring Agency Code

15. Supplementary Notes
Project conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration, and the Texas Department of Transportation.

16. Abstract

This report explores possible strategies for minimizing the negative impacts and maximizing the positive impacts of highway relief routes on small- and medium-size communities in Texas. Planning strategies are identified through a literature search, econometric models, and case studies completed in earlier phases of the research project and through a search for techniques used in other states in the U.S. These efforts turned up little in the way of an established set of planning practices but they did uncover some promising ideas, including policies related facility location and design, signage, annexation and utility provision, and economic development programs. Some strategies are implemented by the state DOT and some by the local community, but their efforts should be coordinated in a collaborative planning process. The planning objectives may include preserving the downtown as a business district, protecting the viability of existing highway-oriented businesses, and promoting (or preventing) new development along the relief route. Little analysis has been done to evaluate the effectiveness of different techniques in achieving these objectives, however.

17. Key Words	18. Distribution Statement
Relief Routes, Econometrics, Bypasses, Small towns, Sales receipts	No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

19. Security Classif. (of report)	20. Security Classif. (of this page)	21. No. of pages	22. Price
Unclassified	Unclassified	48	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

PLANNING FOR THE IMPACTS OF HIGHWAY RELIEF ROUTES ON SMALL- AND MEDIUM-SIZE COMMUNITIES

by

S.L. Handy
J. Jarrett
S. Vanka

Research Report Number 0-1843-4

Research Project 0-1843
"Economic Effects of Highway Relief Routes on Small- and Medium-Size Communities"

Conducted for the

U.S. DEPARTMENT OF TRANSPORTATION

In co-operation with the

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

by the

CENTER FOR TRANSPORTATION RESEARCH
Bureau of Engineering Research
THE UNIVERSITY OF TEXAS AT AUSTIN

March 2001

DISCLAIMERS

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration or the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation.

There was no invention or discovery conceived or first actually reduced to practice in the course of or under this contract, including any art, method, process, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the patent laws of the United States of America or any foreign country.

NOT INTENDED FOR CONSTRUCTION,
BIDDING, OR PERMIT PURPOSES

S.L. Handy
Research Supervisor

ACKNOWLEDGMENTS

The researchers acknowledge the invaluable assistance provided by Lauren Garduno, TxDOT Project Director for this study.

Research performed in co-operation with the Texas Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION

In three previous reports, we have assessed the impacts of highway relief routes on small- and medium-size communities. The findings of our literature review (Handy et al. 2000), quantitative analysis (Kockelman et al. 2000), and case studies (Handy et al. 2001) suggest that the impacts are both positive and negative and that a variety of factors determine the impact of the relief route for a specific community. These factors include forces outside the control of TxDOT or the local community, particularly the location of the community relative to others. But they also include factors within the control of TxDOT, such as the alignment of the relief route and the design of access points, and factors within the control of the local community, such as annexation policies and the extension of utilities to the relief route area. Our research findings thus suggest that TxDOT and local communities through their actions may be able to avoid or at least partially offset the negative impacts of relief routes but also enhance the positive impacts through thoughtful planning efforts.

This report explores possible planning techniques based on our findings in the previous three studies plus an additional search for techniques used in other states. These efforts together turned up little in the way of an established set of planning practices, but they did uncover some promising planning ideas, including policies related to the following:

- Facility location and design
- Signage
- Annexation and utility provision
- Economic development programs

The remainder of this chapter further defines the questions to be explored and lays out the research methodology used. Chapter 2 reviews some interesting efforts to address planning needs in other states. Chapter 3 summarizes our findings for Texas communities and provides overviews of the opportunities to employ some of the promising strategies that emerge in Texas. Finally, Chapter 4 provides our

recommendations for possible planning approaches for TxDOT and communities in Texas.

1.1 DEFINING PLANNING OBJECTIVES

At the outset it must be stated explicitly that the material presented in this report does *not* presume adverse impacts for communities with relief routes. Our quantitative analysis showed that, on average, highway relief routes are associated with small but statistically significant declines in sales in retail and service sectors as a whole and in highway-related sectors in particular (Kockelman et al. 2000). However, the impacts varied by the size of the community, its location relative to metropolitan areas, the location and design of the relief route, and other factors. The case studies confirmed the importance of such factors in explaining the impacts on communities and showed that the impacts themselves may be mixed (Handy et al. 2001). Downtown business districts, for example, may be hurt by the decline in through traffic but benefit from the improved access that results from the decline in traffic. These findings point to several possible objectives for planning, depending on the characteristics and goals of the community:

- Preserve the downtown as a business district.
- Protect the viability of existing highway-oriented businesses.
- Promote (or prevent) new development along the relief route.

Note that these objectives are interrelated and sometimes conflicting. For example, the objective of promoting new development along the relief route may conflict with the objective of preserving the downtown as a business district and protecting the viability of existing highway-oriented businesses. If the community's top priority is to preserve the downtown, it may choose to prevent rather than promote new development along the relief route. If preserving the downtown or protecting existing businesses is not possible, for reasons such as those noted below, then the community's top priority may be to promote new development along the relief route to compensate for the loss of existing economic activity. Only rapidly growing small- and medium-size communities,

such as those found in exurban areas, will have any possibility of achieving all three objectives simultaneously.

It is important to remember that for all three objectives, larger national and industrial forces are also at work (Handy et al. 2001). For example, the decline in rural populations that has accompanied improved efficiencies in agricultural industries has contributed to the decline of retail businesses in small towns. The proliferation of Wal-Mart stores and other discount chains has hurt locally-owned businesses traditionally located in downtown. Consolidation in the oil industry has contributed to a decline in the number of service stations nationally, not just in small communities. The growth in national restaurant and motel chains has meant increased competition for locally-owned businesses. In other words, existing downtown and highway-oriented businesses in these communities are often in trouble even without the relief route. Planning strategies targeted on the impacts of the relief route may not be enough to save these businesses.

1.2 RESEARCH METHODOLOGY

Although planning strategies were not the focus of the research efforts completed in earlier phases of this study, the results of these research efforts help to explain what factors shape the nature and magnitude of the impacts of relief routes and point to several promising approaches explored in this report. Additional research beyond the literature review and case studies included three tasks: a survey of state departments of transportation (DOTs), further correspondence with selected state DOTs, and a review of some of the rules and programs that determine the options for Texas communities. The survey of state DOTs was conducted in the spring of 2000 in conjunction with a survey conducted for Project 0-1873. This survey produced little useful information about planning efforts. In the fall of 2000, we contacted selected DOTs, mostly via email. This effort uncovered a number of interesting ideas, which are summarized in Chapter 2, but also suggested that other DOTs are also searching for proven planning strategies. Finally, we reviewed Texas regulations affecting signage and annexation, both of which emerged from the literature review and case studies as important mitigation strategies, and the Texas Main Street Program, a promising economic development option for certain communities.

Several caveats about the discussion of our research effort should be noted. First, the information presented is based primarily on published sources and only to a limited extent on unpublished reports and electronic communication with state government officials and researchers. Neither time nor resources permitted us to obtain information on-site from communities outside Texas or from local government officials and business owners involved with, and affected by, planning strategies. Second, for the most part, what we have found should prove applicable to recently constructed bypasses and to proposed relief routes. The ideas presented here should prove as useful to communities that are highly supportive of their proposed relief routes as to communities where opinions are divided.

Throughout the entire report, it is important for the reader to remember that this field is still emerging and is relatively undeveloped. A well-established set of planning practices, let alone a body of research that evaluates the effectiveness of those practices in different contexts, does not currently exist. What we present here is clearly exploratory. In the absence of a well-defined body of knowledge based on extensive research, however, this report nevertheless provides a useful starting point for TxDOT and local communities in working to plan for the impacts of highway relief routes, both to minimize the negative impacts and enhance the positive impacts

CHAPTER 2. PLANNING STRATEGIES FROM OTHER STATES

Although many other states have funded research on the impacts of highway relief routes on small- and medium-size communities, none seems to have systematically identified and evaluated strategies to plan for their impacts. A review of the literature about highway relief routes and their impacts uncovered a number of recommended strategies, as summarized below, but little material to support these recommendations. To supplement the ideas found in the literature, we contacted government officials in the following states: Arizona, California, Florida, Hawaii, Iowa, Kansas, Maine, Maryland, North Carolina, Oklahoma, Oregon, Pennsylvania, Washington, and Wisconsin. In several cases (California, North Carolina, Wisconsin, Florida, and Washington) we contacted multiple officials in the state DOT. Researchers in Quebec and Australia heard about our research effort and contacted us regarding mitigation issues. In addition, we contacted a number of non-profit organizations involved with signage, economic development, and transportation, as well as independent researchers and consultants who have conducted analyses of the economic impacts of relief routes. As part of the search process and data collection effort, the engineering firm of Parsons Brinckerhoff Quade and Douglas Inc. alerted its area practice offices about our search for information and requested pertinent materials.[1] The following discussion incorporates the results of all of those efforts.

2.1 IDEAS FROM THE LITERATURE

Most studies on the impacts of highway relief routes conclude that while most communities experience overall benefits from the relief route, certain kinds of businesses may be disproportionately hurt (Handy et al. 2000). A handful of studies also suggest possible planning strategies for these businesses or for the community as a whole.

For example, a summary by the Transportation Research Board (TRB) of a project to assess both the impacts of highway relief routes and current planning practices found that relief routes had overall positive impacts in most communities but that the

---

[1] We wish to express our gratitude to Leonard R. Voellinger of Parsons Brinckerhoff for his interest and assistance.

impacts on highway-oriented businesses along the relief route were negative (Transportation Research Board 1996). This report identified three general strategies used by state agencies to minimize the negative impacts of the relief route: improved signage, improved access to the bypassed area, and public and community involvement in planning. A study from North Carolina, one of those reviewed in the TRB study, came to the same conclusion that highway improvements generally benefit the community as a whole but may negatively impact some businesses (Blackburn and Clay 1991). This study identified three strategies used to minimize negative impacts: advertising, signage along the new route, and adequate access between the old and new routes.

Another review of relief route impact studies, subsequent to the 1996 TRB report, came to the conclusion that the net economic impacts on the community are usually relatively small; some businesses may close, but new business opportunities are generated (Collins and Weisbrod 2000). This study notes that downtown business districts having a strong identity as a destination for tourists or local residents may benefit from the reduction in traffic. However, adequate signage was identified as necessary for the continued success of the district after the construction of the relief route. In addition, this study noted the necessity of infrastructure along the relief route to support new development. Needed infrastructure includes water and sewer services, local interchanges, and local access roads. However, even with the necessary infrastructure, development along the relief route may take 20 years or more in small communities.

These studies suggest that different businesses are affected in different ways by the relief route, some positively, some negatively, and some both. They suggest several approaches to minimizing the negative impacts and enhancing the positive impacts:

- Signage and advertising, important for downtown businesses
- Access, both along the new route and between the new route and the old route, important for new development and for downtown businesses, respectively
- Infrastructure along the new route, important for new development
- Community involvement in the planning process, important for the community as a whole

2.2 STATE PLANNING EFFORTS

Several specific cases involving actual or proposed efforts to plan for the impacts of relief routes also identify signage, access, infrastructure, and community involvement as important strategies in planning for the impacts of a relief route. Additionally, the cases offer several other creative strategies.

2.2.1 Arizona

A recent study of major improvements to the US 93 corridor between Wickenburg, Arizona, and Las Vegas, Nevada, included an analysis of economic impacts and planning options (Sverdrup 2001). The improvement project is still in the feasibility phase, and much of the planning work appears to have been conducted as part of an overall process of deciding among possible relief route alignments. Wickenburg, still a relatively small community of fewer than 25,000 residents, has been growing.

The current planning study relies primarily on a review of a previous report, which in turn relied on a review of previous economic studies. In reviewing the earlier studies, the current study identifies several strategies to minimize negative impacts, including advertising town businesses along the relief route and making access into the town from the relief route as easy as possible. The earlier reports suggest that the relief route also presents economic development opportunities, including new development along the relief route corridor and reduced congestion and improved safety in the downtown business district. Another suggestion was to restrict development near the relief route interchanges to non-commercial uses in order to force visitors into existing business areas for services.

The current study suggests that communities should focus on helping existing businesses adjust to the new conditions, in the interest of equity, and helping to make up for business losses in one part of town by encouraging development in the relief route corridor, in the interest of efficiency. The challenge for community leaders is to manage change, to preserve existing businesses if possible, and mitigate the impacts of business closures for the community. To do this, the study suggests several creative alternatives. One suggestion is to give those businesses most negatively affected by the relief route, such as gas stations, restaurants, and motels, the preferential right to relocate to the relief

route corridor. A second suggestion is the establishment of a Bypass Business Retention Program to help businesses negatively impacted by the decline in pass-by traffic. The goal is to prevent the deterioration of entire business districts as certain types of businesses go into decline. Strategies might include adopting property-maintaining standards, making public investments in targeted areas, and "in extreme cases" using the tools available through redevelopment law. A third suggestion is to initiate a market study and management-assistance process to identify those businesses most likely to be impacted by the relief route and provide assistance and guidance to the affected businesses in advance of the construction of the relief route.

In addition, the study suggests a balanced approach to interchange development. If the community's priority is to protect established business areas, planning and zoning restrictions can be used to restrict development in the interchange area. A moderate approach would allow a limited number of new business locations near the interchange with strict building guidelines. However, this approach would require an exercise of planning and zoning powers beyond the common practice in Arizona (and Texas). Ideally, some existing businesses would relocate to the relief route. However, the cost of relocating can be significant, and those businesses that would most benefit from relocation might be least able to afford it. The study also notes the importance of visibility. According to their survey, 17 percent of pass-by travelers will not venture off of the relief route if they cannot see their potential destination. This finding has important implications for the location of the relief route and the design of interchanges. Strategies to restrict development in the interchange area may backfire if travelers cannot see the downtown business district.

This study suggests a number of potentially useful alternatives that might prove effective in reducing adverse impacts on individual businesses. However, their applicability to small communities in Texas may be limited. Most small- and medium-sized communities in Texas lack the resources to carry out the kinds of assistance programs suggested in this study. Their ability to use these alternatives also depends on state and local land use regulatory authority and quite possibly, state and local tax codes. In addition, preferential treatment for certain businesses at interchanges may be considered an unnecessary intervention by local government in many small Texas

communities. And because Wickenburg is growing and is in a highly traveled corridor between two large metro areas, among the two fastest growing in the country, the context is significantly different from those of many small- and medium-size Texas communities.

2.2.2 Washington

A 1994 study identified strategies to maximize the positive economic impacts as well as minimize possible detrimental impacts of state route main streets and bypasses through small towns in eastern Washington (Gillis 1994). The strategies were drawn from case studies in seven communities that had either a state route bypass or a state route main street. The strategies address both the preservation of the downtown business district and the encouragement of new development at the relief route interchanges.

In general, this study found that downtown business districts in communities with a strong local customer base were less adversely impacted than communities dependent on pass-by traffic. In two communities where downtown businesses had depended heavily on highway trade, Prosser and Sunnyside, the immediate impact from the bypasses caused several businesses to close. Yet in the long term, the impact was muted because new businesses that focused more on the local customer base moved in to replace the highway-oriented businesses. Building a local customer base, thus, seems to be a key step in minimizing the negative impacts of a relief route on the downtown business district. Flexible land use policies that accommodate uses other than retail, such as residential development, service businesses, and light manufacturing, can also help.

In addition, several case studies pointed to the importance of generalized regional marketing of tourist and other attractions to bring more visitors to town. The goal of this approach is to convert drive-by travelers into destination travelers. Multi-jurisdictional marketing, perhaps through the local regional council of governments or through an agreement among the key chambers of commerce in the region, might prove most effective. Strategies such as information kiosks, hospitality training for business owners and employees, and information brochures can be used to entice visitors into the downtown area. However, this strategy requires the development and promotion of "unique shopping and entertainment experiences" that offer qualities not found in new development along the relief route.

On the other hand, development at the relief route interchanges can help to offset possible economic losses that occur from the diversion of traffic from the downtown area. In Prosser, the Washington State Department of Transportation located a rest area near the off-ramp for the relief route through a public-private partnership with the community that helped to encourage new development. This community eventually saw a substantial increase in taxable retail sales, with much of the expansion attributable to development at relief route interchanges. Several of the eastern Washington communities also found that aggressive annexation enabled the cities to capture the tax benefits derived from rapidly expanding property values near the relief route, thereby offsetting a modest loss in tax base within the downtown business district.

2.2.3 Wisconsin

A community guide published by the Wisconsin Department of Transportation (1988) itself might be considered a planning tool, a way of helping residents and community leaders understand and plan for the potential impacts of the relief route. The stated goal of the guide is to "show and tell." It provides information from six communities where relief routes had been built and packages that information for use by residents of communities where relief routes are proposed in the future. The guide contains numerous diagrams, pictures of the relief routes and downtown areas, and photographs of city officials and business owners whose comments were profiled. The format is intelligent, thoughtful, well written, useful, and not overly technical: "The report gives you warm, human, controversial viewpoints rather than cold, statistical data." The guide provides encouragement and practical suggestions to communities where relief routes are proposed.

In-depth interviews and surveys were completed with approximately 130 community leaders in the six communities, primarily local government officials and business owners. Those interviewed were asked to express their opinions about what effects, if any, the bypasses had on their communities and their businesses. While all six communities had unique experiences, those of Mt. Horeb, Wisconsin are perhaps the most informative. This tourist-oriented community realized that the relief route could

greatly affect many of its businesses and organized a planning response early in the process. The community's advice for other communities included the following:

- Planning: Plan for the changes from the bypass long before the construction begins: "We didn't wait until the bypass was already here. We got ready for it. This is something any other community like us should remember."

- Marketing: Come together as a community to plan a coordinated (and new) marketing approach: "Don't sit back. Set your goals with a new marketing approach, then get out and sell what your community has to offer. Our Chamber of Commerce meets every Tuesday to coordinate promotional plans."

- Downtown: Anticipate and plan events and changes that will make travelers want to come downtown. Spruce up the downtown and look for the positive aspects of reduced traffic in the downtown area.

- Signage: Get signs up in advance of the bypass opening and provide better signage than what exists currently because it will be much more important than the current signs.

- Access: Request as many exits and access ramps as possible, consistent with existing roadways and good design practices.

These community-oriented responses supplemented those of the business owners. For example, in one of the other Wisconsin communities, in which there was less community effort to plan for the relief route, several businesses altered their product lines to sell to new customers, rather than to the through-traffic clientele they had previously. No matter what the mitigation responses at the community level, individual business owners need to adapt their businesses appropriately.

2.2.4 Oregon

A video from Mountains-to-Sound Greenways, a non-profit organization located in the Pacific Northwest, provides communities with ideas for how to plan for the impacts of a relief route. The video describes how communities can "take charge" of their fate when a relief route is constructed. At the center of the strategies presented in the video is the philosophy that "The highway is our introduction to the community." The face that a community presents to the highway motorist can influence the motorist's decision to bypass the community or to get off the highway route in order to explore the town. If the route is lined with a collection of fast-food franchises, chain motels, and homogeneous gas stations (which cater to the immediate needs of the motorists), motorists have little incentive to explore further, particularly if the town center is not visible from the highway. However, initiatives by local authorities and businesses can help to reduce the negative effects of the relief route on the local economy.

The video describes how a relief route was constructed around the town of Jacksonville, Oregon to divert commercial traffic from its downtown. Jacksonville's economy is largely dependent on tourism and the local community wanted to preserve the pedestrian-friendly nature of its commercial center. At the same time, local leaders were concerned that new businesses on the bypass route would deprive the downtown businesses of their clientele. To minimize this eventuality, the city proposed strict controls on what can be developed on the highways entering the town, including:

- Limitations on the amount of commercial development on the relief route.
- Design guidelines that specify that any development on the route should be compatible with the style of the town. These controls have been written into the comprehensive plan of the town in the form of urban design guidelines and criteria written into the codes.

Adherence to these codes may increase construction costs for new businesses. However, some business owners see the design guidelines as good in the long run, as the consistency in design gives a special quality to the town's appearance. The appearance of

the town contributes to its appeal to tourists and ultimately adds to the town's economic stability.

2.2.5 Michigan

The Michigan Land Use Institute (MLUI) has proposed a more radical approach to addressing the impacts of relief routes: work with communities to find alternatives to the relief route (MLUI 2001). MLUI has worked with citizens in several communities in Michigan where the Michigan DOT (MDOT) has proposed relief routes. Their efforts raise the question of whether a relief route is always the most cost-effective solution for addressing traffic problems in small communities.

In Petoskey, MDOT has proposed to build a 10-mile, $70 million relief route. Supporters of the project claim it will reduce traffic congestion during the summer along the Lake Michigan shoreline and in the downtown business area. Critics claim that it will negatively impact downtown businesses, increase sprawl and traffic congestion, create safety hazards for farmers and others, degrade natural habitat and contribute to a loss of open space, and pollute the watersheds that empty into Lake Michigan, a water source for the town. The MLUI hired New Alternatives, Inc., a firm that specializes in transportation and land use planning, to work with local residents and city officials to develop alternatives to the proposed relief route. This effort produced the following two options:

- Modernization of local roads, adding turn lanes at intersections and building a limited number of new connector roads.
- Development of a new express route linking existing local roads. This route would be designed for speeds of 35–45 mph, and would enable engineers to plan for a narrower right-of-way and tighter curves than those proposed for the bypass.

Community design workshops were held to develop these options into finished plans. In the workshops the residents drew on maps their preferences for possible road corridors and other improvements. This exercise was followed by discussions on the

benefits and tradeoffs of each idea, with input from the consultants about the impacts of each option.

The proposed 33-mile Traverse City Bypass was a planned four-lane highway designed to speed traffic around Traverse City, the business and financial center of Northwest Michigan. The project faced opposition from local residents who felt their tax money was being used for building an unnecessarily expensive project. Local residents felt that upgrading the current bridge from one to two lanes would cost taxpayers less and would be less damaging than building a new bridge as proposed. Even traffic planners were unable to ascertain whether the bypass would be used during the non-tourist months or would always remain the second choice for tourists who preferred the scenic routes instead. A citizen poll showed that the primary concern about the project was that it would contribute to sprawl, but citizens also expressed fears about the impact of the project on locally owned businesses, open space, and natural resources.

In 1998, local residents participated in a series of workshops along with the MLUI, the Coalition of Sensible Growth, and other community organizations to create a Smart Roads plan, "a citizen-driven transportation and land use blueprint, to alleviate traffic congestion while protecting the environment and saving taxpayer dollars" (MLUI 2001). In essence, the plan aimed to make existing roads work better and focused on protecting the interests of the local communities, neighborhoods, and small businesses. The plan, which took the continued population growth and conservation of open space issues of Northwest Michigan into consideration, made the following recommendations:

- Redesign and improve existing roads.
- Make mass transit more convenient and comfortable.
- Promote new construction in already developed areas.

The effectiveness of these proposals from a traffic standpoint has apparently not been tested, but the proposals have gained the support of a diverse coalition, including environmentalists, local businesses, fiscal conservatives, and most city and county officials. Although the relationship between this coalition and MDOT appears to be highly adversarial, this project could serve as a model for a collaborative effort between a

state DOT and the local community to explore less expensive alternatives to the relief route that also do less economic and environmental damage. The goal of such an effort would be a win-win solution, wherein an acceptable balance between state and local needs is achieved. The state DOT might have to sacrifice some degree of system performance but could potentially stretch its limited construction dollars to address more problems throughout the state. By participating in or even initiating a community-based planning process, the DOT could also build credibility, trust, and support within the community for its efforts and significantly speed the overall project development process.

CHAPTER 3. PLANNING STRATEGIES IN TEXAS

There appear to have been few official efforts in Texas to plan for the economic impacts of relief routes in small- and medium-size communities. However, some of the mitigation strategies used elsewhere may prove effective here. This chapter explores the possibilities for Texas. First, the case studies presented in Report 1843-3 point to steps that both TxDOT and local communities can take to minimize the negative impacts and maximize the positive impacts of relief routes. Second, the Texas context must be considered in assessing the potential for strategies such as signage, annexation, and economic development programs.

3.1 LESSONS FROM THE CASE STUDIES

By shedding light on factors that influence the impacts of relief routes on small- and medium-size communities, the case studies also suggest possible approaches to minimizing the negative impacts and maximizing the positive impacts of relief routes (Handy et al. 2001). In particular, characteristics of the facility and policies of the local government were found to influence the impacts. These findings are consistent with those of studies of relief routes in other states, as summarized in Chapter 2.

Important characteristics of the facility include the alignment and access. There are two primary ways in which alignment impacts the community: the location of intersections with other highways and the type of land adjacent to the relief route. First, the location of the intersection with other highways may determine how much traffic continues to flow through town and thus influence the continued viability of existing businesses. Second, the type of land adjacent to the relief route may determine the potential for new development in this area. Thus, the choice of alignment may help both to minimize negative impacts on existing businesses and to maximize the potential for the relief route to bring new development to the community. Of course, these effects are not the only consideration in the choice of alignment. Because of the unique factors involved in each alignment decision, it is impossible to develop a generalized strategy for using alignment to plan for the economic impacts of relief routes.

Access is another important factor in determining the impact of a relief route. Access can be broken into three components: frontage roads, the number and location of interchanges, and the visibility of interchanges. Two-way frontage roads are perceived to enhance the possibility of development along the relief route, although the case studies provided little evidence that they really help. The number of interchanges and their location seems to be a more critical factor. For one thing, if the interchange is too far from the center of town, businesses at the interchange might not be able to draw enough local business to survive. At the same time, existing businesses in town may fail because of the loss of through traffic. The more universal problem, however, seems to be the visibility of the town from the relief route, as determined by the location and design of interchanges. This problem can affect both highway-related businesses and tourist businesses often found downtown. To some extent, good signage can compensate for poor access.

The actions of local governments also help to determine the impacts of the relief route. Most obviously, the decision to annex the land adjacent to the relief route and provide utilities and other city services seems to be a necessary but not sufficient condition for new development. The decision not to provide utilities, or delays in providing utilities, can inhibit new development along the relief route. Once local governments have annexed the land along the relief route, they can also zone this land for development, although zoning was not a factor in the case studies. In addition, city programs to promote development can help to mitigate the impacts of the relief route as well as other trends that affect the community. The Texas Main Street Program, discussed below, helps some communities to preserve and enhance their historic downtown areas, which may actually benefit from a reduction in traffic. Public-private partnerships can help to bring new development to the relief route area. However, if the owners of the land adjacent to the relief route are not interested in developing or selling, there is little that local governments can do.

3.2 POLICIES ON SIGNAGE

Signs offer a simple but potentially effective technique for minimizing some of the negative impacts of relief routes on existing businesses in the community by

informing travelers of their proximity to the community and the services and attractions found there (Dornbusch and Kawcyznska 1992; Scenic America 2000; Stevens 1987). The development of a signage system is based on the simple philosophy that it is for the benefit and direction of drivers who are not familiar with the route or area. The signs must provide the drivers with clear "instructions for orderly progress to their destinations," according to *The Texas Manual on Uniform Traffic Control Devices for Streets and Highways*, which provides design standards for road and highway signs for the state of Texas. This manual is constantly revised and updated to reflect the changing trends in transportation planning.

The manual lays out several important principles for signage. Planning for the signs should be done at the earliest stages of preliminary highway design. The trick is to provide enough information to be helpful but not so much as to be distracting. Excessive signage could be the result of poorly designed signs and should be avoided by all means. Signs should be provided wherever necessary but only as long as they provide information that is crucial and informative to the drivers. Sign design should also take into account the differences in geographic, geometric and operating factors that distinguish rural expressway/freeway conditions from those of their urban counterparts.

According to the manual, expressway and freeway guide signs are used for a variety of purposes: to give directions to destinations or to routes at intersections and interchanges; to inform the driver in advance of approaching intersections, interchanges, or distances to destinations; to indicate access to general motorist services and to rest, scenic, and recreational areas; and to provide other information of value to the driver.

3.2.1 Destination and Distance Signs

The listing of a community on destination and distance signs helps to make drivers aware of the existence of the community and may increase the chance that they will stop there. Destination signs, which can carry a maximum of four destination names, are to be located at these points:

- The intersections of U.S. or state numbered routes with interstate, U.S., or state numbered routes.

- Points where they serve to direct traffic from U.S. or state numbered routes to the business section of towns or to other destinations reached by unnumbered routes.

In addition, the manual establishes the criteria used to decide what communities are listed and when. The manual states that a destination name or control city should usually be the next major city that has directional value to through traffic by virtue of being well known to the transient motorist. This practice may limit the usefulness of destination signs as a way of increasing awareness of cities not already well known to the transient motorist.

The manual defines the distance sign as a horizontal rectangle that carries the names of not more than three cities, towns, villages, or other traffic generators, with the distance to those places. In the sequence of destination names on the distance sign, the top name is allotted to the next place on the route having a post office, railroad station, route number or name of an intersected highway, other significant geographical identity. These criteria would include most, if not all, cities with relief routes. The last name is reserved for the next major destination or control city, defined as the next town or county seat with over 2,500 population in the case of conventional highways. In situations where three destinations are indicated on the distance sign, the middle line is used to identify communities of general interest along the route or important route junctions. The names in this middle line can be varied on successive distance signs to give travelers maximum information concerning communities served by the route. The distance signs should be located on important routes leaving municipalities and just beyond intersections of numbered routes in rural areas, according to the manual.

3.2.2 General Service, Traffic Generator, and Logo Signs

General service, traffic generator, and logo signs offer more direct promise as a planning strategy by making travelers aware not only of the city but also of the businesses and points of interest found there. General service signs used at intersections typically carry legends (and a directional message) for the following services: food, gas, lodging, camping, phone, hospital, diesel, LP-gas, and tourist information. The sign legends can be in the form of either symbols or word messages, but TxDOT rules prohibit the intermixing of symbols and word messages on one sign. According to the manual,

"All service signs and supplemental panels, shall have reflectorized white letters, symbols and border on a reflectorized or opaque blue background and are to be erected at a suitable distance in advance of the turnoff point or intersecting highway." When used along a relief route, such signs might increase the share of travelers who patronize local businesses.

According to the manual, it may not be necessary to post signs indicating commercial services such as restaurants, gas stations, motels, and phone facilities on conventional highways, where these businesses are available at reasonably frequent intervals and are generally within sight. These signs are mostly needed in locations where these services are irregular or infrequent and where they occur only at the intersections of highways or crossroads, as is generally the case in small- and medium-size communities with relief routes. The manual assumes that in urban areas, where highway-oriented businesses are plentiful, such signs will be required only to indicate the location of hospitals, police assistance, tourist information centers and camping.

Certain traffic generators may also qualify for signs, depending on the volume of traffic generated. Possible traffic generators include museums, zoos, beaches, fairgrounds, lakes, state and national historic sites, national parks, recreation areas, stadiums, state parks, universities, airports, hospitals, military bases, and correctional institutions. In communities with a population of less than 50,000, the activity must attract 50,000 visitors per year plus an additional 5,000 visitors for every mile the activity is located away from the highway to qualify for a sign. As a result, these signs cannot be used to help bring additional traffic to an activity that does not already attract a significant number of visitors. Central Business Districts (CBDs) qualify for Downtown Guide Signs only when the CBD is in the central city of an urban area with a population of more than 100,000. By definition, none of the small- and medium-size communities with relief routes would qualify. The purpose of traffic generator signs is to improve traffic flow and safety near the generator rather than to increase traffic.

The manual recommends other information signs that serve to educate rather than guide travelers with information about state lines, city limits, and other political boundaries; time zones; stream names; elevations; landmarks; and similar items of geographical interest. These kinds of signs may complement efforts to develop a tourism

industry in communities with relief routes. However, the manual specifies that these signs should not be installed in locations meant for guide signs unless there are specific reasons for orienting the highway user or identifying control points for activities that are clearly in the public interest. In other words, these signs are of secondary importance.

Logo signs provide information about specific businesses in town and may be a more effective mitigation strategy than general service signs. Businesses that meet the specified criteria can pay to have their logos featured on the sign. The weekly Texas Register, the notice bulletin for the state agency rules, featured amendments proposed by TxDOT regarding the Specific Information Logo Sign Program in its November 1999 edition. These amendments were proposed to the Texas Administrative Code (TAC § 25.406) by House Bill 1779 in the 76th Texas Legislature in 1999 and were designed to provide better visibility to lodgings, businesses, and food establishments along the highways.

According to previous rules, a lodging establishment was required to have access to a frontage road, ramp, or intersecting crossroad of an eligible highway in order to qualify for a logo sign (Texas Register 1999). The change in the rules for the Logo Program will allow the lodging establishment to request a logo sign if the establishment is visible from an eligible highway or an interchange on an eligible highway and if the establishment is no more than two turns from the access or frontage road of the eligible highway. More lodging establishments should now qualify for logo signs. In the case of businesses requesting variances to the eligibility requirements of the program, previous rules only required that the requesting business be located on a portion of the dedicated state highway system. As per changes, the business requesting a variance to eligibility requirements of the program should be located at or near a grade-separated intersection. According to previous rules for food establishments, a food business has to be open for 12 hours a day and serve three meals a day to be eligible for the program. The new rules allow for the food establishment to request a variance to this criterion if it is open at least 10 hours a day and for six days a week. It is expected that smaller food establishments will benefit from these less stringent rules.

3.2.3 City Pride Signs

City pride signs offer another possible strategy for communities to create an identity and attract through travelers from the relief route. TxDOT's City Pride Sign Program is a voluntary program that allows municipalities to erect and display signs concerning points of interest, or geographical, recreational, cultural, or civic information, at the city limits on state highway right-of-way (Texas Register 1998). Initially this program allowed the installation of city pride signs and Texas Natural Resource Conservation (TNRC) signs at eligible highway entrances of a municipality at city expense, where eligible entrances are defined as entrances on non-controlled access highways on the state highway system. Proposed amendments to the program in 1998 allowed the installation of Keep Texas Beautiful (KTB) and Texas Historical Commission (THC) signs along with the city pride and TNRC signs. The signs were also required to adhere to the specifications and requirements of TxDOT's *Manual on Uniform Traffic Control Devices* and sign standards and specifications. One of the goals of these amendments was to promote tourism through strategically located THC signs.

Cities participating in the City Pride Sign Program have to sign an agreement that specifies the rules and regulations governing these signs. The rules state that one city pride sign is allowed per eligible highway entrance (TxDOT 1998). The sign location has to be approved by the state and must meet the following conditions: on the right side of the roadway (unless otherwise approved), between 300 and 800 feet of the city limits, sensitive to the natural terrain and the motorists' view of existing traffic control signs, and minimal impact on the aesthetics and functionality of the highway. The total area of the sign face should not exceed 80 square feet, and the sign should not contain elements that advertise or promote products or services, contain municipal ordinances or regulations, or resemble other official traffic control devices. The sign should not be illuminated internally or externally. Finally, the sign can contain relevant information with the city's seal or symbol. The agreement also includes rules for attachment signs, defined as signs provided by a civic organization or government entity, that display points of interest, or geographical, recreational, cultural, or civic information, including awards for participation in programs.

Earlier this year, the city of Midland, Texas entered into an agreement with TxDOT to install city pride signs (Newswest 9 2001). The main purpose of the signs is to honor President George W. Bush, who spent his early years in Midland. The billboard signs which, will be installed at Highways 191, 349, 158 and Business Interstate 20, are to read ""Welcome to Midland -- Home of President George W. Bush -- Where the Sky's the Limit."

3.3 ANNEXATION, ZONING, AND INFRASTRUCTURE

Annexation, zoning, and the extension of municipal infrastructure together provide an important tool for cities to control development along the highway relief route. This tool, however, can be applied in different ways. In many cases, the alignment for a new relief route is initially outside of city boundaries. Because counties have no general zoning power, as described below, land can develop with few restrictions. However, the land may lack the basic infrastructure needed for intensive development. Cities have an incentive to annex the land along the relief route to capture the taxes generated by any new development. Once they have annexed this land, according to the rules described below, they have the power to restrict new uses on the land through zoning but are required to provide utilities and other city services. Cities can use zoning and utility provision to either restrict development along the relief route or to enable development.

3.3.1 Zoning Controls in Texas

Zoning provides a powerful tool to influence how land is used, though the power of zoning is limited in important ways. Texas counties have no general zoning power. Thus land in unincorporated areas develops without conforming to comprehensive zoning regulations and generally without a permitting requirement. Moreover, the growing body of congressional acts, agency rulings, and case law have greatly limited the municipal powers to regulate land uses in recent years (Anderson 1989). Zoning determines what kinds of land uses are allowed on a particular site but cannot on its own ensure that the site will ever be developed.

In Texas, zoning cannot technically and formally apply to land until that land is annexed to a city (Mixon 1984). Cities annexing new territory normally impose a permanent or temporary zoning classification on the land. Some land uses in newly annexed areas are not in accordance with the regulations in the zoning district in which the land is placed. If an individual undertakes the non-conforming use before annexation, then that individual's "innocence" is affected after the annexation process commences. According to Texas municipal zoning law, only those innocent uses which are proved to be clearly established before all annexation activity commences are entitled to protected status when they are integrated with the city.

County governments in Texas are not authorized to zone new development in unincorporated areas. While cities can regulate subdivisions in their extraterritorial jurisdiction (ETJ), they cannot impose land-use restrictions on undeveloped land. Furthermore, the Municipal Annexation Act disqualifies newly developed suburban developments from incorporating and adopting zoning ordinances to protect themselves from conflicting land uses (Mixon 1984). As a result, the existing city must annex the newly developing area if it is to be subject to zoning.

3.3.2 Annexation Rules

Rules about annexation depend on a variety of factors. Texas municipalities are divided by the Texas Constitution into two classes: general law and home rule. In most cases, general law towns are entitled to exercise only those powers that have been specifically granted to them by the Texas Constitution and the Texas legislature. Most of the approximately 1,200 incorporated municipalities in the state of Texas are general law cities, which cannot annex property without the owner's consent (Anderson 1989). In contrast, home rule cities can forcibly annex property without the owner's consent.

A city's annexation power is also significantly checked by the statutory requirement that the subject property must be located within that city's ETJ limits. The Municipal Annexation Act, passed by the Texas legislature in 1963, put limits on the municipality's annexation powers. In order to restrict potential aggressive annexation by some cities, the legislature created the concept of the ETJ, an imaginary buffer extending from a city's current corporate limits for distances ranging from 0.5 to 5 miles (Anderson

1989). This limit can increase proportionally with the city's population. For land located in its ETJ, a municipality has concurrent jurisdiction with counties on the issues of platting, extension of utilities, health, and environment. Barring the cities of Austin and Galveston, which have limited-purpose annexation powers established in their charters, no city in Texas can zone land within its ETJ limits (Anderson 1989). The ETJ boundary of a municipality cannot overlap with the ETJ or corporate boundary of another municipality. The expansion of the ETJ is possible only when adjacent land is annexed, the population of the municipality grows so much that it generates a need for an increase in the statutory ETJ distance, or adjacent landowners file a written petition to be included within the municipality's ETJ.

An additional limitation on the municipality's annexation powers is the requirement that the property being annexed must meet certain geographical standards established by state statute and case law, including the following:

Contiguity

The property being annexed should be physically contiguous to the current city limits. In recent times, the Texas legislature has addressed the problem of certain municipalities annexing very thin strips of land, usually around street rights-of-way or creek beds, in order to obtain valuable pieces of developable land. A 1983 amendment to the Municipal Annexation Act requires that a proposed annexed area be a minimum of 500 ft in width at its narrowest point except at the corner adjacent to the annexing city's boundaries. According to Anderson (1989), these width limitations do not apply to annexations that are initiated by written petition of the owners or a majority of the qualified voters of the area to be annexed; annexations for which the city owns both sides of the strip; or annexations of city-owned reservoirs or airports. The 71st Texas Legislature made an amendment to the Municipal Annexation Act that allows a landowner to consent to a non-contiguous limited-purpose annexation.

Service Plans

The validity of an annexation ordinance may also be affected by the existence of a service plan and the city's compliance with it. The service plan must be attached to and

incorporated in the annexation ordinance. The Texas Local Government Code requires the municipality to commit in writing at the time of adoption of the annexation ordinance that it can provide specific services (such as police protection, fire protection, solid waste collection, water and wastewater facilities, roads, and other publicly owned facilities) within a stated time period. Law also requires that these services must be funded in whole or in part by municipal taxation. The service plan provisions must match the level and number of services that were available in the area to be annexed at the time immediately preceding annexation.

Maximum Amounts

The Texas Local Government Code declares that a municipality cannot annex an area greater than 10 percent of its incorporated area, with the exception of properties owned by a government entity or requested for annexation by landlords or voters.

3.3.3 Municipal Infrastructure

The provision of municipal infrastructure is another important tool Texas cities can use to manage growth. Cities generally participate in infrastructure projects for private development that benefit a large section of the population and not merely the developer. In many cases, cities require a developer to construct all on-site and off-site infrastructure at its cost, while contributing partial reimbursement for the expenditure incurred by the developer to oversize the facility to serve other landowners. The rules and regulations of the municipal utility will govern the actual extension of city services to the property.

Municipal exactions from developers for infrastructure improvements have been supported by the courts as constitutional. Under Texas law, cities can expect developers to pay for the construction of water and sanitary sewer mains, lines, extensions and hookups; utility lines and hookup fees; and street, curb, alley, and storm sewer construction (Anderson 1989). Developers may also be required to dedicate land for streets, alleys, and abutting thoroughfare rights-of-way. In situations where both the developer and municipality are unable to finance a major infrastructure project, the landowner has the option of establishing a Municipality Utility District (MUD). The

utility district is a constructing and financing vehicle that also operates the water supply and distribution system, sanitary sewer collection and treatment system, and storm sewer and drainage system that together serve the land contained within its boundaries.

3.4 TEXAS MAIN STREET PROGRAM

The Texas Main Street Program was started at the initiative of the Texas Historical Commission (THC) in 1981 with the goal of revitalizing deteriorating historic downtowns and neighborhood commercial districts. Strategies such as architectural preservation and economic development projects have been adopted to create vibrant and prosperous urban environments that address local needs and opportunities. This program offers promise for at least some relief-route communities as a way to plan for the impacts of the relief route.

Currently 125 Texas cities are registered under the official Texas Main Street Program. This status entitles them to a range of services provided by THC staff. These services include comprehensive training for Main Street managers and board members and training for communities in successful economic development approaches. The staff also evaluates the programs and gives recommendations for heritage tourism programs and marketing. However, participation in the program requires a significant financial commitment on the part of the community, which must fund a half-time position for a program director.

Participation in the Texas Main Street Program has led many cities to new economic growth and community development. Involvement in such projects has provided a common platform for different groups of the community such as merchants, city officials, financial agencies, chamber members, and individual citizens. The showcasing of these communities as attractive locations for potential investors and new businesses is another positive spin-off of the Main Street Program. The tourism industry has also received a boost from the revitalization efforts in many of these cities. According to the THC, some of the achievements of the Texas Main Street Program since its inception in 1981 have been the following:

- Reinvestment of nearly $722 million in Texas downtowns and neighborhood commercial districts.

- Creation of more than 16,434 jobs.
- Establishment of more than 4,419 new businesses.

Not only does the Main Street Program help to counter the impacts of a relief route, but the relief route can also contribute to the success of a Main Street Program. A relief route can serve the dual purpose of making the community center pedestrian oriented and providing better regional linkages to the community. On the other hand, the route may divert prospective visitors and their spending from such communities. Appropriate signage along the relief route that gives travelers clear directions about how to find the Main Street area of the community can help, as can advertising.

3.4.1 La Grange

La Grange, one of the case study communities in Report 1843-3, was designated an Official Texas Main Street City in 1996 (Main Street La Grange 2001). The Main Street Program was well supported by the local residents and the business community, and the city integrated the program as a city department in 1998. The program was funded locally during its first three years. It includes the following elements:

- Spatially organizing the downtown for improved use of available vacant space. Building consensus and co-operation among all the groups and individuals important to the revitalization process.
- Enhancing the physical appearance of the commercial district by rehabilitating historic buildings, encouraging supportive new construction, developing sensitive design management systems, and undertaking long-term planning.
- Sponsoring events in the CBD for the entire community (such as sidewalk sales, concerts, and fairs). Marketing the traditional commercial district's assets to customers, potential investors, new businesses, local citizens, and visitors.
- Identifying marketing needs and developing programs to meet those needs; adapting buildings to new uses; developing upper story spaces; assisting businesses with rehabilitation incentives; and focusing on retail business retention, expansion, and recruitment.

As in other cities, the La Grange Main Street Program has revived local pride in the city's heritage and culture. Historic preservation has been adopted to revitalize the area and is seen as an effective strategy to attract future investors. The State Highway 71 relief route, which was completed in 1989, has also helped attract new business to La Grange in recent times. Thus the combination of enhanced access and the Main Street Program has worked for the benefit of the city of La Grange.

CHAPTER 4. MAKING IT WORK

Planning for the impacts of relief routes, both to minimize the negative impacts and maximize the positive impacts, is a relatively undeveloped practice. Several promising ideas have emerged from studies of the impacts of highway relief routes, but little effort has yet gone into evaluating the effectiveness of those ideas. In general, the strategies are aimed at one or more objectives: preserving downtown businesses, protecting existing highway-oriented businesses, or encouraging (or discouraging) new development. Table 4-1 provides a summary of the strategies identified in previous chapters that TxDOT and local communities can consider as they plan for the impacts of relief routes in order to achieve these objectives. However, our research suggests that success requires a collaborative approach on the part of both TxDOT and the local community that includes partnership, communication, and visioning. In addition, our research highlights the need for further research into the effectiveness of strategies to plan for the economic impacts, both positive and negative, of relief routes.

4.1 COLLABORATIVE PLANNING

It is clear from case studies in Texas and elsewhere that the most successful planning efforts involve a partnership between the state DOT and the local community. In such a partnership, the DOT and the community work together to develop a solution that meets both of their needs. A good starting point is the goal they share: to improve safety and mobility within the community. The disagreements usually arise over decisions about the location and design of the proposed facility and the impact of the shift in traffic on the local economy. By working together, the DOT better understands the concerns of the community, and the community better understands the constraints facing the DOT. The trade-offs between different goals can be explored and discussed in a more open and less confrontational way. Although a collaborative planning effort takes a considerable investment of time, the overall project development process can be speedier if conflicts and delays are reduced. The final plan can be one that meets the needs of the state DOT but also addresses the concerns of the community.

Table 4-1. Summary of Potential Mitigation Strategies by Objective

	Preserve Downtown Businesses	Protect Existing Highway-Oriented Businesses	Encourage (Discourage) New Development
TxDOT Strategies			
Alignment	X	X	X
Access to town	X	X	
Access along route			X
Visibility	X	X	X
Signage	X	X	
Amenities			X
Local Involvement	X	X	X
Local Strategies			
Annexation			X
Zoning	X	X	X
Infrastructure	X	X	X
Design Guidelines	X		
Advertising/Marketing	X	X	
Business Retention	X	X	
Main Street Program	X		
Visioning/Planning	X	X	X

Adequate communication is a key element of a partnership. The DOT must provide up-to-date information to the community about the status of the project and provide opportunities for residents of the community to express their concerns and share their ideas. A recent TxDOT research project provides an assessment of the best practices in public involvement nationally and in Texas (Gilliland 2000). This report concludes that successful public involvement efforts require a substantial commitment of time, resources, and energy throughout the project development process. The goal is "long, respectful, two-way communications" between the DOT and the community. In our case studies in Texas communities, we found notable levels of frustration with TxDOT, with both the perceived inadequacy of TxDOT's response to community concerns and the long periods of uncertainty associated with the planning of a relief

route. More attention to communication can help alleviate such frustrations and build trust between TxDOT and the community.

The DOT can also contribute to the collaborative process by conducting community impact assessments as a part of the project development process. Although these assessments are not as standardized as environmental impact assessments, several recent publications provide guidance on how to evaluate the potential social and economic impacts of a highway project on a community. Two recent reports published by the National Highway Cooperative Research Program (NCHRP) are especially useful (Forkenbrock and Weisbrod 2001; TRB 2000). Another NCHRP report provides guidance on the communication of economic impacts (Hagler Bailly Services, Inc 1999). Forkenbrock and Weisbrod (2001) argue: "The social and economic effects of transportation projects should be fully considered because (1) these effects can be substantial and (2) they often are important to the quality of people's lives" (pg. 1). These analyses are inherently complex, however, for at least four reasons:

- A balance has to be drawn between benefits to users of the facility and effects on other community residents.
- Even among community residents, numerous effects (some positive, some negative) interact and must be traded off.
- Various population groups within the community may be affected quite differently in terms of mixes of effects.
- People vary in their preferences and opinions, so that what is acceptable or even desirable to some may be unacceptable to others.

The report identifies current best methods, tools, and techniques used by state DOTs and metropolitan planning organizations and presents them in a guidebook format.

The community can contribute to the collaborative process by providing a clear vision of its future. With such a vision, the community is in a better position to work with the DOT to minimize potential negative impacts and capitalize on possible opportunities generated by the relief route. A visioning process addresses four questions (Oregon Visions Project 1993): where are we now, where are we going, where do we

want to be, and how do we get there? The relief route is just one consideration in this process, which enables a community to define a consistent set of strategies for reaching its goals. Unfortunately, a comprehensive visioning process requires a substantial commitment of time and money. Small- and medium-size communities in Texas, many of which do not even employ a city planner, may not have the necessary resources available. In some cases, communities may be able to raise private funds to sponsor at least an initial visioning effort. Several non-profit organizations, including Texas Rural Communities, Inc. and Scenic Texas, Inc., might be able to offer assistance on specific strategies. One way or another, civic leaders need to ensure that the planning of the relief route complements other public efforts to improve quality of life in their community.

4.2 FUTURE RESEARCH DIRECTIONS

This overview points to several potential directions for future research and analysis. Additional data collection about planning for the impacts of relief routes in other countries, especially Canada, Australia, and various European nations, might prove fruitful. Additional data collection regarding planning techniques that have proven successful in other fields might also yield useful ideas for Texas communities. Mitigation of economic impacts has had a much more extensive history in the siting of major new facilities (chemical plants, low-level nuclear waste facilities, high level nuclear waste repositories, and federal installations) than in the construction of highways. While the magnitude of impacts may not be as large with highways as with these other facilities, the experiences with various techniques and the overall community planning relationships could provide further options for TxDOT. Empirical studies of the effectiveness of all of the approaches identified in this report are essential.

Finally, much of the future work on planning for the impacts of relief routes will depend on our ability to measure more precisely the adverse impacts on specific businesses and other organizations. A head start has been made in this regard with the detailed impacts on specific types of businesses described extensively in a previous report from this project (Kockelman et al. 2000). Still, for businesses to more effectively plan for the impacts of the relief route, more finely tuned models are needed for estimating the economic loss at the firm level from a relief route. In addition, longitudinal studies, in

which baseline data are collected before the construction of the relief route and additional data are collected at several points afterwards, could more accurately pinpoint the causal role that relief routes play in the changes observed in these communities. These longitudinal studies could also include an assessment of the effectiveness of any planning strategies adopted by the communities to address the potential impacts of the relief route.

REFERENCES

Anderson, Arthur J., *Texas Land Use Law*, Eau Claire, Wisc.1989

Blackburn, Sabrina and Ames W. Clay, University of North Carolina at Charlotte, *Impacts of Highway Bypasses on Community Businesses,* prepared for the North Carolina Division of Community Assistance and the I-40 Steering Committee, November 1991.

Collins, Margaret and Glen Weisbrod, *Economic Impact of I-73 Alignments on Roanoke, the City of Roanoke (Virginia),* Dept. of Economic Development, Economic Research Group, February 2000.

Dornbusch, David and Claudia Kawcyznska, "Tourist Oriented Directional Signs: A Self-Supporting Program To Promote Rural Business and Economic Development," *Journal of Travel Research*, Volume XXXI, Number 1, Summer 1992.

Forkenbrock, David J. and Glen E. Weisbrod, *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*, Report 456, National Cooperative Highway Research Program, Transportation Research Board, Washington, D.C., 2001.

Gilliland, Cynthia A. Weatherby, *An Assessment of Public Involvement Strategies*, Report 1875-1, Texas Transportation Institute for the Texas Department of Transportation, November 2000.

Gillis, William R., *Lessons from Eastern Washington: State Routes and Economic Development in Small Towns,* Eastern Washington Intermodal Transportation Study, Research Report Number 2, Washington State University, Pullman, Washington, February 1994.

Hagler Bailly Services, Inc. with Morpace International, Inc., Guidance for Communicating the Economic Impacts of Transportation Investments, Report 436, National Highway Cooperative Research Program, Transportation Research Board, Washington, D.C., 1999.

Handy, S., S. Kubly, J. Jarrett, and S. Srinivasan, *Economic Impacts of Highway Relief Routes on Small- and Medium-Size Communities: A Review of the Literature*, Research Report 1843-1, Center for Transportation Research, the University of Texas at Austin, March 2000.

Handy, S., S. Kubly, D. Larsen, and M. Oden, *Economic Impacts of Highway Relief Routes on Small- and Medium-Size Communities: Case Studies*, Research Report 1843-3, Center for Transportation Research, the University of Texas at Austin, March 2001.

Kockelman, K, S. Srinivasan, and S. Handy, *Economic Effects of Highway Relief Routes on Small-and Medium-Size Communities: An Econometric Analysis*, Research Report

1843-2, Center for Transportation Research, the University of Texas at Austin, September 2000

Main Street La Grange, available: http://mainstreet.fais.net/new_main_street/historic_preservation/historic_pres.htm, retrieved 3/06/2001.

Michigan Land Use Institute (MLUI), *Key Issues: Transportation*, available: http://www.mlui.org/projects/transport/, retrieved 5/4/2001.

Mixon, John, *Texas Municipal Zoning Law*, Butterworth Legal Publishers, Austin, Texas, 1984.

Mountains-to-Sound Greenways, *Taking Charge: Successful Models for Scenic Towns and Highways,* video, Seattle, (206) 382-5565.

Oregon Visions Project, *A Guide to Community Visioning*, Oregon Chapter of the American Planning Association, 1993.

Scenic America, *Logo Signs, TODS, and Wayfinding Signs: Effective, Attractive Alternatives to Billboards*, Washington, D.C., September 2000.

State of Texas, *Texas Manual on Uniform Traffic Control Devices for Streets and Highways*, issued in accordance with the provisions contained in the State Highway and Public Transportation Commission Minute Order No. 77548. Passed July 21, 1980.

Stevens, Dwight L., *Tourist Oriented Directional Signing*, paper presented at the Annual Meeting, Subcommittee on Traffic Engineering, Charleston, SC, June 22-24, 1987.

Sverdrup Civil, Inc., available: http://www.wickenburg.civilnet.sverdrup.com/Publications/EconStudy.htm, retrieved 2/2001.

Texas Department of Transportation (TxDOT), City Pride Sign Agreement, December 1998.

Texas Historical Commission, available: http://www.thc.state.tx.us/Main_Street/mainst.html, retrieved 2/2001.

Texas Register, Subchapter G, Specific Information Logo Sign Program, November 12, 1999, available: http://texinfo.library.unt.edu/texasregister/1999.html#11, retrieved 5/2001.

Texas Register, August 14, 1998, available: http://texinfor.library.unt.edu/texasregister/html/1998/Aug-14/PROPOSED/transportation.html#304, retrieved 2/2001.

Transportation Research Board (TRB), *Effects of Highway Bypasses on Rural Communities and Small Urban Areas*, National Cooperative Highway Research Program Project 20-5, Synthesis of Information Related to Highway Problems, *Research Results Digest*, Number 210, May 1996.

Transportation Research Board (TRB), *Current Practices for Assessing Economic Development Impacts from Transportation Investments*, Synthesis 290, National Cooperative Highway Research Program, Washington, D.C., 2000.

Wisconsin Department of Transportation, *Highway Bypasses: Wisconsin Communities Share Their Experiences,* Division of Planning, c. 1988.